CLAIM AMENDMENTS

1-61. (canceled)

62. (currently amended) A communication device, comprising:

an input, coupled to a communication channel, that is operable to receive a signal;

a synchronization module that includes a Viterbi decoder, a phase detector, and a voltage controlled oscillator, wherein:

the synchronization module is operable to recover a first symbol, a second symbol, and a third symbol from the signal;

the first symbol is followed by the second symbol; and

the second symbol is followed by the third symbol; and

the Viterbi decoder operating with a zero traceback depth; and

a turbo decoder that is operable to decode the first symbol, the second symbol, and the third symbol that are provided from the synchronization module to make best estimates of information bits encoded therein.

63. (previously presented)The communication device of claim 62, further comprising:

a multiplier, whose mixing frequency is governed by the voltage controlled oscillator, that is operable to multiply the signal by the mixing frequency to match a carrier frequency of the signal to assist in recovery of the first symbol, the second symbol, and the third symbol from the signal.

64. (previously presented)The communication device of claim 62, wherein:

the Viterbi decoder is operable to consider the first symbol when estimating the second symbol; and

the Viterbi decoder is operable to consider the first symbol and the second symbol when estimating the third symbol.

65. (previously presented)The communication device of claim 62, further comprising:

a multiplier, whose mixing frequency is governed by the voltage controlled oscillator, that is operable to multiply the signal by the mixing frequency to match a carrier frequency of the signal to assist in recovery of the first symbol, the second symbol, and the third symbol from the signal; and wherein:

the Viterbi decoder is operable to consider the first symbol and the second symbol when estimating the third symbol; and

the phase detector is operable to employ at least one of the first symbol, the second symbol, and the third symbol to determine whether recovery of symbols from the signal, as performed by the synchronization module, is lagging or leading actual symbols within the signal and to adjust the voltage controlled oscillator based on any lagging or leading.

66. (previously presented)The communication device of claim 62, further comprising:

a multiplier, whose mixing frequency is governed by the voltage controlled oscillator, that is operable to multiply the signal by the mixing frequency to match a carrier frequency of the signal to assist in recovery of the first symbol, the second symbol, and the third symbol from the signal; and wherein:

the Viterbi decoder is operable to consider the first symbol and the second symbol when estimating the third symbol;

the phase detector is operable to employ at least one of the first symbol, the second symbol, and the third symbol to determine whether recovery of symbols from the signal, as performed by the synchronization module, is lagging or leading actual symbols within the signal and to adjust the voltage controlled oscillator based on any lagging or leading; and

the adjustment of the voltage controlled oscillator is operable to make the mixing frequency to be substantially equal to the carrier frequency of the signal.

67. (previously presented)The communication device of claim 62, further comprising:

a multiplier, whose mixing frequency is governed by the voltage controlled oscillator, that is operable to multiply the signal by the mixing frequency to match a carrier frequency of the signal to assist in recovery of the first symbol, the second symbol, and the third symbol from the signal; and wherein:

the third symbol output from the multiplier is provided simultaneously to both the Viterbi decoder and the phase detector;

the Viterbi decoder is operable to consider the first symbol and the second symbol when estimating the third symbol; and

the phase detector is operable to compare the third symbol output from the multiplier and the estimate of the third symbol as made by the Viterbi decoder to determine whether recovery of symbols from the signal, as performed by the synchronization module, is lagging or leading actual symbols within the signal and to adjust the voltage controlled oscillator based on any lagging or leading.

68. (previously presented)The communication device of claim 62, wherein:

the communication device is coupled to at least one additional communication device via the communication channel;

the at least one additional communication device includes a turbo encoder that is operable to encode at least one information bit thereby generating at least one of the first symbol, the second symbol, and the third symbol of the signal; and

the at least one additional communication device is operable to launch the signal into the communication channel.

69. (previously presented)The communication device of claim 62, wherein:

the communication device is coupled to at least one additional communication device via the communication channel;

the at least one additional communication device includes a turbo encoder that is operable to encode data thereby generating the first symbol, the second symbol, and the third symbol of the signal;

the turbo encoder includes:

a first trellis encoder that is operable to encode the data thereby generating first encoded data;

an interleaver that is operable to interleave the data thereby generating interleaved data;

a second trellis encoder that is operable to encode the interleaved data thereby generating interleaved encoded data;

an inverse interleaver that is operable to unscramble the interleaved encoded data that has been generated by the second trellis encoder thereby generating second encoded data;

a switch that is operable alternatively to select symbols from the first encoded data and the second encoded data; and

the at least one additional communication device is operable to launch the signal into the communication channel.

70. (previously presented)The communication device of claim 62, wherein:

the signal is received by the communication device via a communication channel that couples the communication device to a relay satellite.

71. (previously presented)The communication device of claim 62, wherein:

the communication device is coupled to at least one additional communication device via the communication channel;

the communication channel includes a relay satellite;

the communication device is a satellite communication receiver; and

the at least one additional communication device is a communication transmitter.

72. (currently amended) A method for processing a signal, the method comprising:

receiving a signal from a communication channel;

recovering a first symbol, a second symbol, and a third symbol from the signal by performing frequency mixing of the signal and subsequent Viterbi decoding and phase detection of symbols generated by the frequency mixing, wherein:

the first symbol is followed by the second symbol; ~~and~~

the second symbol is followed by the third symbol; and

the Viterbi decoding operating with a zero traceback depth; and

turbo decoding the first symbol, the second symbol, and the third symbol that are recovered from the signal to make best estimates of information bits encoded therein.

73. (previously presented)The method of claim 72, further comprising:

multiplying the signal by a mixing frequency to match a carrier frequency of the signal to assist in recovery of the first symbol, the second symbol, and the third symbol from the signal.

74. (previously presented)The method of claim 72, wherein:

when performing Viterbi decoding, considering the first symbol when estimating the second symbol; and

when performing Viterbi decoding, considering the first symbol and the second symbol when estimating the third symbol.

75. (previously presented)The method of claim 72, further comprising:

multiplying the signal by a mixing frequency to match a carrier frequency of the signal to assist in recovery of the first symbol, the second symbol, and the third symbol from the signal;

when performing Viterbi decoding, considering the first symbol and the second symbol when estimating the third symbol;

employing at least one of the first symbol, the second symbol, and the third symbol when performing phase detection to determine whether recovery of symbols from the signal is lagging or leading actual symbols within the signal; and

adjusting the mixing frequency based on any lagging or leading.

76. (previously presented)The method of claim 72, further comprising:

multiplying the signal by a mixing frequency to match a carrier frequency of the signal to assist in recovery of the first symbol, the second symbol, and the third symbol from the signal;

when performing Viterbi decoding, considering the first symbol and the second symbol when estimating the third symbol;

employing at least one of the first symbol, the second symbol, and the third symbol when performing phase detection to determine whether recovery of symbols from the signal is lagging or leading actual symbols within the signal;

adjusting the mixing frequency based on any lagging or leading; and wherein:

the adjustment of the mixing frequency is operable to make the mixing frequency to be substantially equal to the carrier frequency of the signal.

77. (previously presented)The method of claim 72, further comprising:

multiplying the signal by a mixing frequency to match a carrier frequency of the signal to assist in recovery of the first symbol, the second symbol, and the third symbol from the signal;

simultaneously providing the third symbol for use in Viterbi decoding and phase detection;

when performing Viterbi decoding, considering the first symbol and the second symbol when estimating the third symbol;

when performing phase detection, comparing the third symbol output from the multiplying and the estimate of the third symbol as made in accordance with Viterbi decoding to determine whether recovery of symbols from the signal is lagging or leading actual symbols within the signal; and

adjusting the mixing frequency based on any lagging or leading.

78. (previously presented)The method of claim 72, wherein:

the method is performed in a communication device;

the communication device is coupled to at least one additional communication device via the communication channel;

the at least one additional communication device includes a turbo encoder that is operable to encode at least one information bit thereby generating at least one of the first symbol, the second symbol, and the third symbol of the signal; and

the at least one additional communication device is operable to launch the signal into the communication channel.

79. (previously presented)The method of claim 72, wherein:

the method is performed in a communication device;

the communication device is coupled to at least one additional communication device via the communication channel;

the at least one additional communication device includes a turbo encoder that is operable to encode data thereby generating the first symbol, the second symbol, and the third symbol of the signal;

the turbo encoder includes:

a first trellis encoder that is operable to encode the data thereby generating first encoded data;

an interleaver that is operable to interleave the data thereby generating interleaved data;

a second trellis encoder that is operable to encode the interleaved data thereby generating interleaved encoded data;

an inverse interleaver that is operable to unscramble the interleaved encoded data that has been generated by the second trellis encoder thereby generating second encoded data;

a switch that is operable alternatively to select symbols from the first encoded data and the second encoded data; and

the at least one additional communication device is operable to launch the signal into the communication channel.

80. (previously presented)The method of claim 72, wherein:

the method is performed in a communication device;

the signal is received by the communication device via a communication channel that couples the communication device to a relay satellite.

81. (previously presented)The method of claim 72, wherein:

the method is performed in a communication device;

the communication device is coupled to at least one additional communication device via the communication channel;

the communication channel includes a relay satellite;

the communication device is a satellite communication receiver; and

the at least one additional communication device is a communication transmitter.

82. (currently amended) A communication device, comprising:

an input, coupled to a communication channel, that is operable to receive a signal;

a multiplier that is operable to multiply the signal by the mixing frequency to match a carrier frequency of the signal to assist in recovery of the first symbol, the second symbol, and the third symbol from the signal;

a synchronization module that includes a Viterbi decoder, a phase detector, and a voltage controlled oscillator, wherein:

the Viterbi decoder and the phase detector each receive the mixed signal output from the multiplier;

the synchronization module is operable to recover a first symbol, a second symbol, and a third symbol from the signal;

the first symbol is followed by the second symbol;

the second symbol is followed by the third symbol; ~~and~~

the mixing frequency of the multiplier is governed by the voltage controlled oscillator; and

the Viterbi decoder operating with a zero traceback depth; and

a turbo decoder that is operable to decode the first symbol, the second symbol, and the third symbol that are provided from the synchronization module to make best estimates of information bits encoded therein.

83. (previously presented)The communication device of claim 82, wherein:

the Viterbi decoder is operable to consider the first symbol when estimating the second symbol; and

the Viterbi decoder is operable to consider the first symbol and the second symbol when estimating the third symbol.

84. (previously presented)The communication device of claim 82, wherein:

the Viterbi decoder is operable to consider the first symbol and the second symbol when estimating the third symbol; and

the phase detector is operable to employ at least one of the first symbol, the second symbol, and the third symbol to determine whether recovery of symbols from the signal, as performed by the synchronization module, is lagging or leading actual symbols within the signal and to adjust the voltage controlled oscillator based on any lagging or leading.

85. (previously presented)The communication device of claim 82, wherein:

the Viterbi decoder is operable to consider the first symbol and the second symbol when estimating the third symbol;

the phase detector is operable to employ at least one of the first symbol, the second symbol, and the third symbol to determine whether recovery of symbols from the signal, as performed by the synchronization module, is lagging or leading actual symbols within the signal and to adjust the voltage controlled oscillator based on any lagging or leading; and

the adjustment of the voltage controlled oscillator is operable to make the mixing frequency to be substantially equal to the carrier frequency of the signal.

86. (previously presented)The communication device of claim 82, wherein:

the third symbol output from the multiplier is provided simultaneously to both the Viterbi decoder and the phase detector;

the Viterbi decoder is operable to consider the first symbol and the second symbol when estimating the third symbol; and

the phase detector is operable to compare the third symbol output from the multiplier and the estimate of the third symbol as made by the Viterbi decoder to determine whether recovery of symbols from the signal, as performed by the synchronization module, is lagging or leading actual symbols within the signal and to adjust the voltage controlled oscillator based on any lagging or leading.

87. (previously presented)The communication device of claim 82, wherein:

the communication device is coupled to at least one additional communication device via the communication channel;

the at least one additional communication device includes a turbo encoder that is operable to encode at least one information bit thereby generating at least one of the first symbol, the second symbol, and the third symbol of the signal; and

the at least one additional communication device is operable to launch the signal into the communication channel.

88. (previously presented)The communication device of claim 82, wherein:

the communication device is coupled to at least one additional communication device via the communication channel;

the at least one additional communication device includes a turbo encoder that is operable to encode data thereby generating the first symbol, the second symbol, and the third symbol of the signal;

the turbo encoder includes:

a first trellis encoder that is operable to encode the data thereby generating first encoded data;

an interleaver that is operable to interleave the data thereby generating interleaved data;

a second trellis encoder that is operable to encode the interleaved data thereby generating interleaved encoded data;

an inverse interleaver that is operable to unscramble the interleaved encoded data that has been generated by the second trellis encoder thereby generating second encoded data;

a switch that is operable alternatively to select symbols from the first encoded data and the second encoded data; and

the at least one additional communication device is operable to launch the signal into the communication channel.

89. (previously presented)The communication device of claim 82, wherein:

the signal is received by the communication device via a communication channel that couples the communication device to a relay satellite.

90. (previously presented)The communication device of claim 82, wherein:

the communication device is coupled to at least one additional communication device via the communication channel;

the communication channel includes a relay satellite;

the communication device is a satellite communication receiver; and

the at least one additional communication device is a communication transmitter.

91. (currently amended) A method for processing a signal, the method comprising:

receiving a signal from a communication channel;

recovering a first symbol, a second symbol, and a third symbol from the signal from the signal by multiplying the signal by a mixing frequency to match a carrier frequency of the signal and subsequent Viterbi decoding and phase detection of symbols generated by the frequency mixing, wherein:

the multiplied signal is simultaneously provided for Viterbi decoding and phase detection;

the first symbol is followed by the second symbol; ~~and~~

the second symbol is followed by the third symbol; and

the Viterbi decoding operating with a zero traceback depth; and

when performing Viterbi decoding, considering the first symbol when estimating the second symbol;

when performing Viterbi decoding, considering the first symbol and the second symbol when estimating the third symbol; and

turbo decoding the first symbol, the second symbol, and the third symbol that are recovered from the signal to make best estimates of information bits encoded therein.

92. (previously presented)The method of claim 91, further comprising:

employing at least one of the first symbol, the second symbol, and the third symbol when performing phase detection to determine whether recovery of symbols from the signal is lagging or leading actual symbols within the signal; and

adjusting the mixing frequency based on any lagging or leading.

93. (previously presented)The method of claim 91, further comprising:

employing at least one of the first symbol, the second symbol, and the third symbol when performing phase detection to determine whether recovery of symbols from the signal is lagging or leading actual symbols within the signal;

adjusting the mixing frequency based on any lagging or leading; and wherein:

the adjustment of the mixing frequency is operable to make the mixing frequency to be substantially equal to the carrier frequency of the signal.

94. (previously presented)The method of claim 91, further comprising:

when performing phase detection, comparing the third symbol output from the multiplying and the estimate of the third symbol as made in accordance with Viterbi decoding to determine whether recovery of symbols from the signal is lagging or leading actual symbols within the signal; and

adjusting the mixing frequency based on any lagging or leading.

95. (previously presented)The method of claim 91, wherein:

the method is performed in a communication device;

the communication device is coupled to at least one additional communication device via the communication channel;

the at least one additional communication device includes a turbo encoder that is operable to encode at least one information bit thereby generating at least one of the first symbol, the second symbol, and the third symbol of the signal; and

the at least one additional communication device is operable to launch the signal into the communication channel.

96. (previously presented)The method of claim 91, wherein:

the method is performed in a communication device;

the communication device is coupled to at least one additional communication device via the communication channel;

the at least one additional communication device includes a turbo encoder that is operable to encode data thereby generating the first symbol, the second symbol, and the third symbol of the signal;

the turbo encoder includes:

a first trellis encoder that is operable to encode the data thereby generating first encoded data;

an interleaver that is operable to interleave the data thereby generating interleaved data;

a second trellis encoder that is operable to encode the interleaved data thereby generating interleaved encoded data;

an inverse interleaver that is operable to unscramble the interleaved encoded data that has been generated by the second trellis encoder thereby generating second encoded data;

a switch that is operable alternatively to select symbols from the first encoded data and the second encoded data; and

the at least one additional communication device is operable to launch the signal into the communication channel.

97. (previously presented)The method of claim 91, wherein:

the method is performed in a communication device;

the signal is received by the communication device via a communication channel that couples the communication device to a relay satellite.

98. (previously presented)The method of claim 91, wherein:

the method is performed in a communication device;

the communication device is coupled to at least one additional communication device via the communication channel;

the communication channel includes a relay satellite;

the communication device is a satellite communication receiver; and

the at least one additional communication device is a communication transmitter.

99. (currently amended) A communication device, comprising:

an input, coupled to a communication channel, that is operable to receive a signal;

a multiplier that is operable to multiply the signal by the mixing frequency to match a carrier frequency of the signal to assist in recovery of the first symbol, the second symbol, and the third symbol from the signal;

a synchronization module that includes a Viterbi decoder, a phase detector, and a voltage controlled oscillator, wherein:

the Viterbi decoder and the phase detector each receive the mixed signal output from the multiplier;

the synchronization module is operable to recover a first symbol, a second symbol, and a third symbol from the signal;

the first symbol is followed by the second symbol;

the second symbol is followed by the third symbol;

the mixing frequency of the multiplier is governed by the voltage controlled oscillator;

the Viterbi decoder is operable to consider the first symbol when estimating the second symbol;

the Viterbi decoder is operable to consider the first symbol and the second symbol when estimating the third symbol; ~~and~~

the Viterbi decoder operating with a zero traceback depth; and

the phase detector is operable to employ at least one of the first symbol, the second symbol, and the third symbol to determine whether recovery of symbols from the signal, as performed by the synchronization module, is lagging or leading actual symbols within the signal and to adjust the voltage controlled oscillator based on any lagging or leading; and

a turbo decoder that is operable to decode the first symbol, the second symbol, and the third symbol that are provided from the synchronization module to make best estimates of information bits encoded therein.

100. (previously presented)The communication device of claim 99, wherein:

the adjustment of the voltage controlled oscillator is operable to make the mixing frequency to be substantially equal to the carrier frequency of the signal.

101. (previously presented)The communication device of claim 99, wherein:

the third symbol output from the multiplier is provided simultaneously to both the Viterbi decoder and the phase detector.

102. (previously presented)The communication device of claim 99, wherein:

the communication device is coupled to at least one additional communication device via the communication channel;

the at least one additional communication device includes a turbo encoder that is operable to encode at least one information bit thereby generating at least one of the first symbol, the second symbol, and the third symbol of the signal; and

the at least one additional communication device is operable to launch the signal into the communication channel.

103. (previously presented)The communication device of claim 99, wherein:

the communication device is coupled to at least one additional communication device via the communication channel;

the at least one additional communication device includes a turbo encoder that is operable to encode data thereby generating the first symbol, the second symbol, and the third symbol of the signal;

the turbo encoder includes:

a first trellis encoder that is operable to encode the data thereby generating first encoded data;

an interleaver that is operable to interleave the data thereby generating interleaved data;

a second trellis encoder that is operable to encode the interleaved data thereby generating interleaved encoded data;

an inverse interleaver that is operable to unscramble the interleaved encoded data that has been generated by the second trellis encoder thereby generating second encoded data;

a switch that is operable alternatively to select symbols from the first encoded data and the second encoded data; and

the at least one additional communication device is operable to launch the signal into the communication channel.

104. (previously presented)The communication device of claim 99, wherein:

the signal is received by the communication device via a communication channel that couples the communication device to a relay satellite.

105. (previously presented)The communication device of claim 99, wherein:

the communication device is coupled to at least one additional communication device via the communication channel;

the communication channel includes a relay satellite;

the communication device is a satellite communication receiver; and

the at least one additional communication device is a communication transmitter.

106. (currently amended) A method for processing a signal, the method comprising:

receiving a signal from a communication channel;

recovering a first symbol, a second symbol, and a third symbol from the signal from the signal by multiplying the signal by a mixing frequency to match a carrier frequency of the signal and subsequent Viterbi decoding and phase detection of symbols generated by the frequency mixing, wherein:

the multiplied signal is simultaneously provided for Viterbi decoding and phase detection;

the first symbol is followed by the second symbol;

the second symbol is followed by the third symbol; ~~and~~

the phase detection involves employing at least one of the first symbol, the second symbol, and the third symbol to determine whether recovery of symbols from the signal is lagging or leading actual symbols within the signal and adjusting the mixing frequency based on any lagging or leading; and

the Viterbi decoding operating with a zero traceback depth; and

when performing Viterbi decoding, considering the first symbol when estimating the second symbol;

when performing Viterbi decoding, considering the first symbol and the second symbol when estimating the third symbol; and

turbo decoding the first symbol, the second symbol, and the third symbol that are recovered from the signal.

107. (previously presented)The method of claim 106, wherein:

the adjustment of the mixing frequency is operable to make the mixing frequency to be substantially equal to the carrier frequency of the signal.

108. (previously presented)The method of claim 106, further comprising:

when performing phase detection, comparing the third symbol output from the multiplying and the estimate of the third symbol as made in accordance with Viterbi decoding to determine whether recovery of symbols from the signal is lagging or leading actual symbols within the signal.

109. (previously presented)The method of claim 106, wherein:

the method is performed in a communication device;

the communication device is coupled to at least one additional communication device via the communication channel;

the at least one additional communication device includes a turbo encoder that is operable to encode at least one information bit thereby generating at least one of the first symbol, the second symbol, and the third symbol of the signal; and

the at least one additional communication device is operable to launch the signal into the communication channel.

110. (previously presented)The method of claim 106, wherein:

the method is performed in a communication device;

the communication device is coupled to at least one additional communication device via the communication channel;

the at least one additional communication device includes a turbo encoder that is operable to encode data thereby generating the first symbol, the second symbol, and the third symbol of the signal;

the turbo encoder includes:

a first trellis encoder that is operable to encode the data thereby generating first encoded data;

an interleaver that is operable to interleave the data thereby generating interleaved data;

a second trellis encoder that is operable to encode the interleaved data thereby generating interleaved encoded data;

an inverse interleaver that is operable to unscramble the interleaved encoded data that has been generated by the second trellis encoder thereby generating second encoded data;

a switch that is operable alternatively to select symbols from the first encoded data and the second encoded data; and

the at least one additional communication device is operable to launch the signal into the communication channel.

111. (previously presented)The method of claim 106, wherein:

the method is performed in a communication device;

the signal is received by the communication device via a communication channel that couples the communication device to a relay satellite.

112. (previously presented)The method of claim 106, wherein:

the method is performed in a communication device;

the communication device is coupled to at least one additional communication device via the communication channel;

the communication channel includes a relay satellite;

the communication device is a satellite communication receiver; and

the at least one additional communication device is a communication transmitter.

113. (currently amended) A communication device, comprising:

an input, coupled to a communication channel, that is operable to receive a signal;

a multiplier that is operable to multiply the signal by the mixing frequency to match a carrier frequency of the signal to assist in recovery of the first symbol, the second symbol, and the third symbol from the signal;

a synchronization module that includes a Viterbi decoder, a phase detector, and a voltage controlled oscillator, wherein:

the Viterbi decoder and the phase detector each receive the mixed signal output from the multiplier;

the output of the Viterbi decoder is provided to the phase detector;

the synchronization module is operable to recover a first symbol, a second symbol, and a third symbol from the signal such that the first symbol is followed by the second symbol and the second symbol is followed by the third symbol;

the Viterbi decoder is operable to consider the first symbol when estimating the second symbol; ~~and~~

the Viterbi decoder is operable to consider the first symbol and the second symbol when estimating the third symbol;

the Viterbi decoder operating with a zero traceback depth;

the phase detector is operable to employ at least one of the first symbol, the second symbol, and the third symbol to determine whether recovery of symbols from the signal, as performed by the synchronization module, is lagging or leading actual symbols within the signal and to adjust the voltage controlled oscillator based on any lagging or leading; and

the adjustment of the mixing frequency by the voltage controlled oscillator is operable to make the mixing frequency to be substantially equal to the carrier frequency of the signal; and

a turbo decoder that is operable to decode the first symbol, the second symbol, and the third symbol that are provided from the synchronization module to make best estimates of information bits encoded therein.

114. (previously presented)The communication device of claim 113, wherein:

the communication device is coupled to at least one additional communication device via the communication channel;

the at least one additional communication device includes a turbo encoder that is operable to encode at least one information bit thereby generating at least one of the first symbol, the second symbol, and the third symbol of the signal; and

the at least one additional communication device is operable to launch the signal into the communication channel.

115. (previously presented)The communication device of claim 113, wherein:

the signal is received by the communication device via a communication channel that couples the communication device to a relay satellite.